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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,367	10/28/2003	**Oswin Ottinger**	SGL 02/24	5955

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EXAMINER	
VIJAYAKUMAR, KALLAMBELLA M	
ART UNIT	PAPER NUMBER
1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,367	OTTINGER ET AL.	
	Examiner	Art Unit	
	KALLAMBELLA VIJAYAKUMAR	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4 and 7-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-4, 7-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/10/2008 has been entered.
- Applicant's amendment filed along with the arguments 05/21/2008 has been fully considered. Claims 1 and 8 were amended. Claims 2 and 5-6 cancelled. Claims 1, 3-4 and 7-13 as amended are currently pending with the application.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1, 3-4 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by, or under 35 U.S.C. 103(a) as obvious over Kusuyama (US 5,294,300).

Kusuyama teaches a composition for forming a graphite sheet that is a gasket (Cl-1, Ln 8-13) comprising a dispersion of expanded graphite particles in water <PCM> (Cl-5, Ex-1). The expanded graphite particles were formed by first compressing expanded graphite particles to a bulk density of 0.05 – 0.15 g/cc (50-150 g/l) and then grinding the compressed expanded graphite to a particle size of about 60-100 mesh (150-250 micron) (Abstract, Cl-2, Ln 23-25; Cl-3, Ln 4-8). An example of the dispersion comprised of 5200 parts by wt (PBW) water (PCM) <5200 cc water>, 85 parts by wt (PBW) of compressed graphite particles with a bulk density of 0.08 g/cc (80 g/l), 10 PBW of Aramid fiber pulp (nucleating agent) and 5 PBW NBR-latex. A small amount of white zinc was added to assist cross-linking of NBR. Further, 85 PBW of EG at a bulk density of 0.08 g/cc will have a volume factor of (85/0.08) 1062 cc that would amount to (1062/6262) 17.0 vol% EG in the dispersion that meets the limitations of "A material mixture" in the claims; and "[W]hen, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is anticipated' if one of them is in the prior art." Titanium Metals Corp. v.

Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (citing In re Petering, 301F.2d 676, 682, 133 USPQ 275, 280 (CCPA 1962)). All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Kusuyama et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to a person of ordinary skilled in the art to vary the compression pressure of the EG in the making of EG powder to optimize its density to benefit from desired EG characteristics with predictable results and reasonable expectation of success because the prior art is suggestive optimizing the bulk density of the EG powder (Cl-2, Ln 27-40).

2. Claims 1 and 7-13 are rejected under 35 U.S.C. 103(a) as obvious over Meza et al (US 6,620,359).

Meza et al teach the composition of molded polymeric article comprising a polymer such as nylon, PPS, PP, HDPE and TPO <PCM> and 1-20 wt% Expanded Graphite (EG) powder (Cl-3, Ln 27-29, 50-54). *Applicants define PCM to be substances which undergo a phase transition at a given temperature when heat is supplied or removed, for example a phase transition from the solid phase to the liquid phase (melting) or from the liquid phase to the solid phase (solidification) (Spec, Pg-1, Ln 13-19),* and the prior art polymers meet this limitation. PP and HDPE meet the limitation of paraffins in claim-7. The EG was obtained by grinding recycled flexible graphite to a powder with a particle size of 20-80 mesh (180-250 micron) and having a bulk density of 0.177-0.230 g/cc (Cl-2, Ln 1-18). The ground EG was re-expanded by a factor 100-150X (Cl-3, Ln 15-16) and processed in to a gasket (Cl-3, Ln 21-23). The EG powder was mixed with the resin/polymer in a heated tubular mixer or premixed and formed into a pellet. The EG/polymer was molded into an article such as a pellet/gasket (Cl-3, Ln 40-47; Cl-4, Ln 7-18, 19-29).

The prior art is silent about the density of EG per the claims 1 and 8; and making the device by jolt-molding per claim 13.

However, the prior art teaches using a modified EG with a particle size 25-80 mesh and a bulk density of 0.177-0.230 g/cc, and further concerned about dust generated by handling graphite that is a function of particle size and bulk density, (Cl-4, Ln 8-9), and it would have been obvious to a person of ordinary skilled in the art to optimize the bulk density and/or particle size of EG powder by routine

experimentation as a choice of design of graphite characteristics to benefit from reduced graphite dust with predictable results and reasonable expectation of success, and generally differences in concentration or temperature or bulk density or particle size will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature or bulk density or particle size is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Pertaining to claim-13, the prior art teaches molding the composite into a shape and it would have been obvious to a person of ordinary skilled in the art to substitute the molding technique with other common molding techniques including jolting molding as functional equivalent with predictable results and reasonable expectation of success because it was well known in the art to at the time of disclosure of the invention by the applicants to use it in making filled resin composites (Chavatal et al, US 3,361,684; Title, Cl-5, Ln 35-40).

3. Claims 1 and 7-13 are rejected under 35 U.S.C. 103(a) as obvious over Meza et al (US 6,620,359) in view of Kusuyama (US 5,294,300).

Meza et al teach the composition of molded polymeric article comprising a polymer such as nylon, PPS, PP, HDPE and TPO <PCM> and 1-20 wt% Expanded Graphite (EG) powder (Cl-3, Ln 27-29, 50-54). PP and HDPE meet the limitation of paraffins in claim-7. The EG was obtained by grinding recycled flexible graphite to a powder with a particle size of 20-80 mesh (180-250 micron) and having a bulk density of 0.177-0.230 g/cc (Cl-2, Ln 1-18). The ground EG was re-expanded by a factor 100-150X (Cl-3, Ln 15-16) and processed in to a gasket (Cl-3, Ln 21-23). The EG powder was mixed with the resin/polymer in a heated tubular mixer or premixed and formed into a pellet. The EG/polymer pellet was molded into an article such as a pellet/gasket (Cl-3, Ln 40-47; Cl-4, Ln 7-18, 19-29).

The prior art is silent about the density of EG per the claims 1 and 8; and making the device by jolt-molding per claim 13.

In the analogous art of gaskets, Kusuyama teaches a composition for forming a graphite sheet that is a gasket (Cl-1, Ln 8-13) comprising a dispersion of expanded graphite particles in water (PCM) (Cl-5, Ex-1). The expanded graphite particles for the dispersion were formed by first compressing expanded graphite particles to a bulk density of 0.05 - 0.15 g/cc (50-150 g/l) and then grinding the compressed expanded graphite to a particle size of about 60-100 mesh (Abstract, Cl-2, Ln 23-25; Cl-3, Ln 4-8). The prior art teaches mixing the components and shaping it in to a sheet by casting the composition, pressing it under pressure and calendaring between rollers (Ex-1).

It would have been obvious to a person of ordinary skilled in the art to substitute the EG powder in the molding composition of Meza et al with the EG powder of Kusuyama as functional equivalent with predictable results and reasonable expectation of success because Meza is concerned about dust generated by handling graphite that is a function of particle size and bulk density (Cl-4, Ln 8-9), and the teachings are in the analogous art of molded gaskets. With regard to the limitation of "comminuted, compacted expanded graphite product" that is a product obtained by a specific process, the combined prior art product containing expanded graphite is either same or substantially same as that obtained by a specific process step/treatment in the instant claims, and a prima-facie obviousness exists because, Where the claimed and prior art products/components are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Thorpe, 227 USPQ 964 (CAFC 1985); In re Marosi et al, 218 USPQ 289; In re Pilkington, 162 USPQ 145.

Pertaining to claim-13, the prior art teaches molding the composite into a shape and it would have been obvious to a person of ordinary skilled in the art to substitute the molding technique with other common molding techniques including jolting molding as functional equivalent with predictable results and reasonable expectation of success because it was well known in the art to at the time of disclosure of the invention by the applicants to use it in making filled resin composites (Chavatal et al, US 3,361,684; Title, Cl-5, Ln 35-40).

4. Claims 1, 7-9 and 11 are rejected under 35 U.S.C. 103(a) as obvious over Doi et al (JP 63-023993).

Doi et al teach moldable composite composition and a molded product comprising 0.5-90 wt% expanded graphite powder with a bulk density of 0.01-0.5 cc/g that has been surface treated with lubricating oil **<** paraffin/PCM**>**, and 99.5 to 10 wt% thermoplastic such as PPS and nylon-6 **<PCM>** (Abstract). The prior art teaches surface treating the expanded graphite powder by immersion with lubricating oil <paraffin/PCM>, crushing it and mixing it homogeneously with a thermoplastic binder, and then forming the molded product. The prior art component ratios when calculated as volume % percent using the bulk density values will overlap over instant claimed ranges and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The prior art fails to teach the composition/article containing expanded graphite particles are compacted and comminuted per claims 1 and 8; and their particle sizes.

However, the prior art teaches a composite containing expanded graphite that is either same or substantially same as that obtained by a specific process step/treatment in the instant claims, and a prima-facie obviousness exists because, Where the claimed and prior art products/components are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). With regard to particle size, normally it is a known variable for the particulate material that is optimizable by routine experimentation, and generally, differences in concentration or temperature or particle size will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature or particle size is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

5. Claims 1 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bader (Thesis, Univ. Auckland, February 2002) in view of either Eska et al (DE 19630073 A1) or Glueck et al (US 6,130,265).

The prior art teaches a thermal energy storage composition comprising LDPE, EVA, paraffin wax (d= 0.84-0.92 g/cc) and 5 wt% expanded/exfoliated graphite powder (EG) (Pg-11; Table 3.1-1; Pg-18, Table 3.2-1). The exfoliated graphite had a particle size of less than 12 micron for UF2 96/97 and less than 45 micron for EDM 96/97.

The prior art fails to teach the composition/article containing compacted and comminuted expanded graphite particles, and silent about the volume % of the components and density of the expanded graphite per the claims -1 and 8, and mixing particles per claim-9.

The prior art teaches using a commercially available expanded graphite with a particle size of <12 micron or <45 micron after exfoliation in the composition. The bulk density of the prior art EG would be obvious over the density values for EG used in a latent heat device at the time of the disclosure of the invention by the applicants which is 75-1,500 g/l (See Eska et al, DE 19630073 A1, Abstract; See Tamme, Workshop on Thermal Storage for Trough Power Systems, Feb. 20-21, 2003, Golden CO, Page-17; See Glueck et al, Cl-3, Ln 1-4 and 62-63: 100-500 g/l). The prior art component volume ratios when calculated as volume % using the density values [95/0.84 paraffin : 5/0.075 EG) = (113.09 cc : 66.66 cc) or 37.09 v% EG] would overlap over instant claimed ranges in claims 1 and 8. The prior art teaches a composite containing expanded graphite that is either same or substantially same as that obtained by a specific process step/treatment in the instant claims, and a prima-facie obviousness exists because, Where the claimed and prior art products/components are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

With regard to claim-7, the prior art teaches paraffin.

With regard to claims 8 and 10-11, the prior art teaches making a PCM by mixing the components, melt blending the components and forming a pellets (Page-15) and shaping the product by melt injection (Page-16).

With regard to claim-9, the prior art teaches blending of the components, and an elimination of a pre-blending the particles as a choice of design of the process conditions by a person of ordinary skilled in the art would be obvious, because Omission of an Element/Step and Its Function Is Obvious If the Function of the Element/Step Is Not Desired Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) <MPEP 2144.04>.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bader (Thesis, Univ. Auckland, February 2002) in view of either Eska et al (DE 19630073 A1) or Glueck et al (US 6,130,265) and further in view of Neuschutz et al (US 2002/ 0033247).

The disclosure by Bader et al on the composition and making of the a latent heat storage/PCM device as set forth in rejection-5 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of a nucleating agent per claims-3-4.

In the analogous art, Neuschutz et al teach the addition of axillaries such as nucleating agents to the compositions containing liquid-solid PCM's containing graphite (Para 0035; 0040-0041).

It would be obvious to a person of ordinary skill in the art to combine the prior art teachings to include nucleating agents in the latent heat storage device of Bader to minimize super cooling effects with reasonable expectation of success because it is a solid-liquid type PCM device and teachings are in analogous art. With regard to claim-4, it requires an addition of a miniscule amount of a nucleating agent to the composition, and this would be obvious over the addition a nucleating agent to the composition of Bader et al.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bader (Thesis, Univ. Auckland, February 2002) in view of either Eska et al (DE 19630073 A1) or Glueck et al (US 6,130,265) and further in view of Chavatal et al (US 3,361,684).

The disclosure by Bader et al on the composition and making of the a latent heat storage/PCM device as set forth in rejection-5 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach making the device by jolt-molding per claim 13.

However, the prior art teaches molding the composite into a shape and it would have been obvious to a person of ordinary skilled in the art to substitute the molding technique with other common molding techniques including jolting molding as functional equivalent with reasonable expectation of success because it was well known in the art to at the time of disclosure of the invention by the applicants to use it in making filled resin composites (Chavatal et al, US 3,361,684; Title, Cl-5, Ln 35-40).

8. Claims 1 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao et al (Energy Conversion and Management, January 2002, (43), Pages 103-108) in view of Eska et al (DE 19630073 A1).

The prior art teaches a shape stabilized latent heat storage device comprising SBS rubber (d=0.98 g/cc), paraffin (d=0.84-0.9 g/cc) and expanded graphite (EG) in the ratio of 80:20:5 parts by weight respectively (Page-103, Abstract; Page 104, Sec. 2.1 and 2.3; Pg-105, Section 2.5; Page-106, Sec 3.2). The particle size of the expandable graphite was 300 microns.

The prior art fails to teach the composition/article containing compacted and comminuted expanded graphite particles, and silent about the volume % of the components and density of the expanded graphite per the claims -1 and 8, and mixing particles per claim-9.

The prior art teaches using a commercially available expanded graphite with a particle size of 300 micron after exfoliation in the composition. The bulk density of the prior art EG would be obvious over the density values for EG used in a latent heat device at the time of the disclosure of the invention by the applicants which is 75-1,500 g/l (Eska et al, DE 19630073 A1, Abstract; Tamme, Workshop on Thermal Storage for Trough Power Systems, Feb. 20-21, 2003, Golden CO, Page-17). The prior art component volume ratios when calculated as volume % using the density values [(80/0.98 : 20/0.84 paraffin : 5/0.75 EG) = (81.63 cc : 23.81 cc: 6.66 cc) or 5.94 %(v) EG] would overlap over instant claimed ranges in claims 1 and 8. The prior art teaches a composite containing expanded graphite that is either same or

substantially same as that obtained by a specific process step/treatment in the instant claims, and a prima-facie obviousness exists because, Where the claimed and prior art products/ components are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

With regard to claim-7, the prior art teaches paraffin.

With regard to claims 8 and 10-11, the prior art teaches making a cylindrical device by mixing EG with molten paraffin/PCM and molding the composition in to cylinder (Page-104, Sec. 2.3, Page-105, Sec 2.5).

With regard to claim-9, the prior art teaches blending of the components, and an elimination of a pre-blending the particles as a choice of design of the process conditions by a person of ordinary skilled in the art would be obvious, because Omission of an Element/Step and Its Function Is Obvious If the Function of the Element/Step Is Not Desired Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) <MPEP 2144.04>.

9. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao et al (Energy Conversion and Management, January 2002, (43), Pages 103-108) in view of Eska et al (DE 19630073 A1) and Neuschutz et al (US 2002/0033247).

The disclosure by Xiao et al on the composition and making of a latent heat storage device as set forth in rejection-8 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of a nucleating agent per claims-3-4.

In the analogous art, Neuschutz et al teach the addition of axillaries such as nucleating agents to the compositions containing liquid-solid PCM's containing graphite (Para 0035; 0040-0041).

It would be obvious to a person of ordinary skill in the art to combine the prior art teachings to include nucleating agents in the latent heat storage device of Xiao to minimize super cooling effects with reasonable expectation of success because it is a solid-liquid type PCM device and teachings are in analogous art. With regard to claim-4, it requires an addition of a miniscule amount of a nucleating agent

to the composition, and this would be obvious over the addition a nucleating agent to the composition of Xiao et al.

10. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao et al (Energy Conversion and Management, January 2002, (43), Pages 103-108) in view of Eska et al (DE 19630073 A1) and either Hayward, (US 5,882,570) or Chavatal et al. (US 3,361,684).

The disclosure by Xiao et al on the composition and making of the a latent heat storage device as set forth in rejection-8 under 35 USC 103(a) is herein incorporated.

The prior art is silent about making the device by specific molding per claims 12-13.

However, the prior art teaches molding the composite into a shape, and it would have been obvious to a person of ordinary skilled in the art to use common molding techniques including injection molding which was routinely used for molding polymer/graphite composites (Hayward, US 5,882,570, Abstract) or jolting molding used for making filled resin composites (Chavatal et al, US 3,361,684; Title, Cl-5, Ln 35-40) as functional equivalent of molding process predictable results and reasonable expectation of success, because these processes were well known in the art for molding polymer composites at the time of the disclosure of the invention by the applicants.

Response to Arguments

Applicant's arguments with respect to claims filed 1/21/2007 have been fully considered but not persuasive for the following reasons:

In response to the arguments by the applicants, the examiner withdraws the rejection of claims 8 and 10-11 over Kusumaya et al (US 5,294,300).

In response to the argument that "the opinion of the Examiner that the water mentioned in Kusuyama would act as a phase change material (PCM) in the material described in Kusuyama, is incorrect. The water is completely removed from the product and serves only as a re-expansion aid" has been addressed in the rejection-1 cited above (Response, Pg-8, Para-2). In the absence of a definition of material mixture by the applicants, Kusuyama's mixture of water and EG would meet this limitation over

the plain meaning of the word (See Mixture, Webster's Dictionary). Furthermore, the mixture containing 5-40V% EG and 95-60V% water per the claims would be a slurry similar to Kusuyama's composition.

In response to the argument that Meza removes water from EG, and there is no reason that it would or could act as a PCM, the prior art teaches a molded pellet comprising EG and a polymer such as nylon/HDPE <PCM>. Applicants define *"The term phase change materials is understood to mean substances which undergo a phase transition at a given temperature when heat is supplied or removed, for example a phase transition from the solid phase to the liquid phase (melting) or from the liquid phase to the solid phase (solidification), such as the pairing ice and water at the freezing point of the latter"* (Spec, Pg-1, Ln 13-19); and Nylon with a melting point of 190-350C meets the limitation of PCM in the claims- as in fact nearly anything would. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

Applicants are correct in that the Glueck reference does not teach "a PCM" per the claims; but it is in the related art of EG, and has been used to show the claimed characteristics could be present in the prior art disclosures (Res, Pg- 9, Para-2).

Applicant's argument that Doi et al. or Xiao et al discloses the particle size of EG but fails to disclose the instant claimed comminuted, compacted expanded graphite of the specific bulk density, whose properties are different and have many advantages is noted (Res, Pg-9, Para-3 through Pg-11), but the argued properties and the advantages are not the limitations of the instant claims, and although "That claims are interpreted in light of the specification does not mean that everything in the specification must be read into the claims." Raytheon Co. v. Roper Corp., 724 F.2d 951, 957, 220 USPQ 592, 597 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984). Applicants fail to patentably distinguish their graphite and the mixture over the prior art, and fail to address the arguments about the graphite obtained by a specific process step and optimization of parameters cited in the last office action.

For the reasons set forth above, applicants fail to patentably distinguish their composition and process over the prior art.

It is suggested to call the examiner to discuss the patentability issues.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV//
August 13, 2008.

/Stuart Hendrickson/

Primary Examiner, Art Unit 1793